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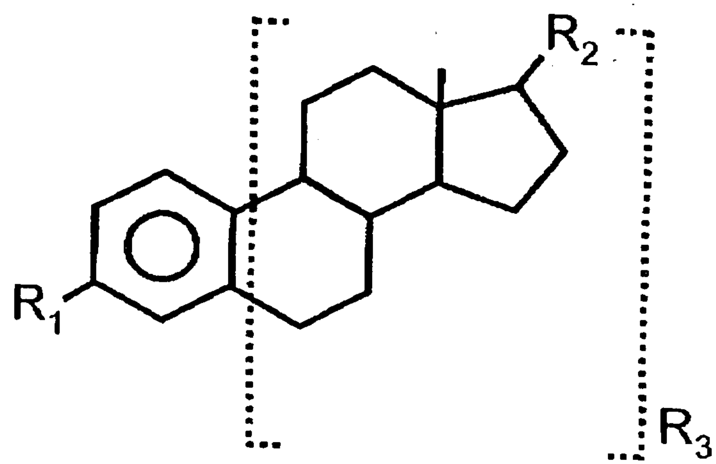


Figure 1: General structure of activators of non-genomic Estrogen-Like Signalling (ANGELS).

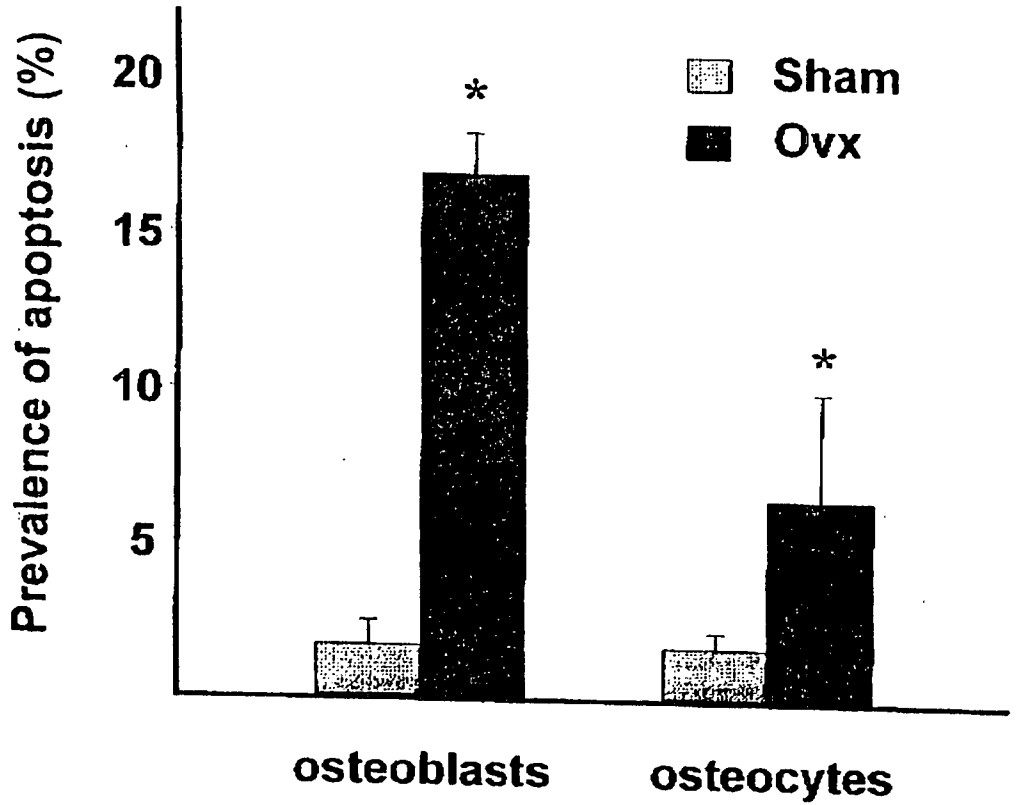


Figure 2: Estrogen deficiency causes increased apoptosis of osteoblasts and osteocytes in murine vertebral bone.

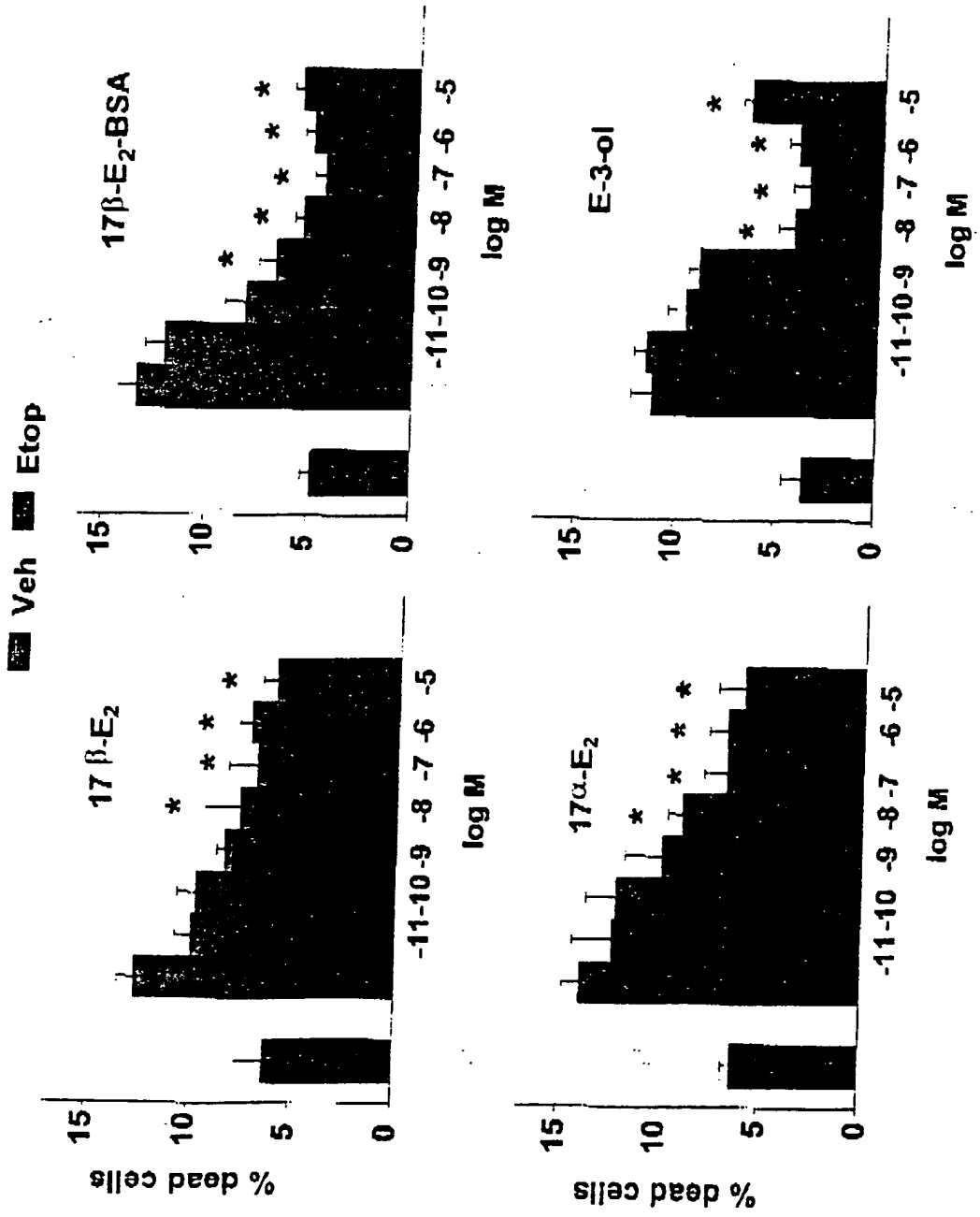


Figure 3: Inhibition of apoptosis of osteoblastic cells.

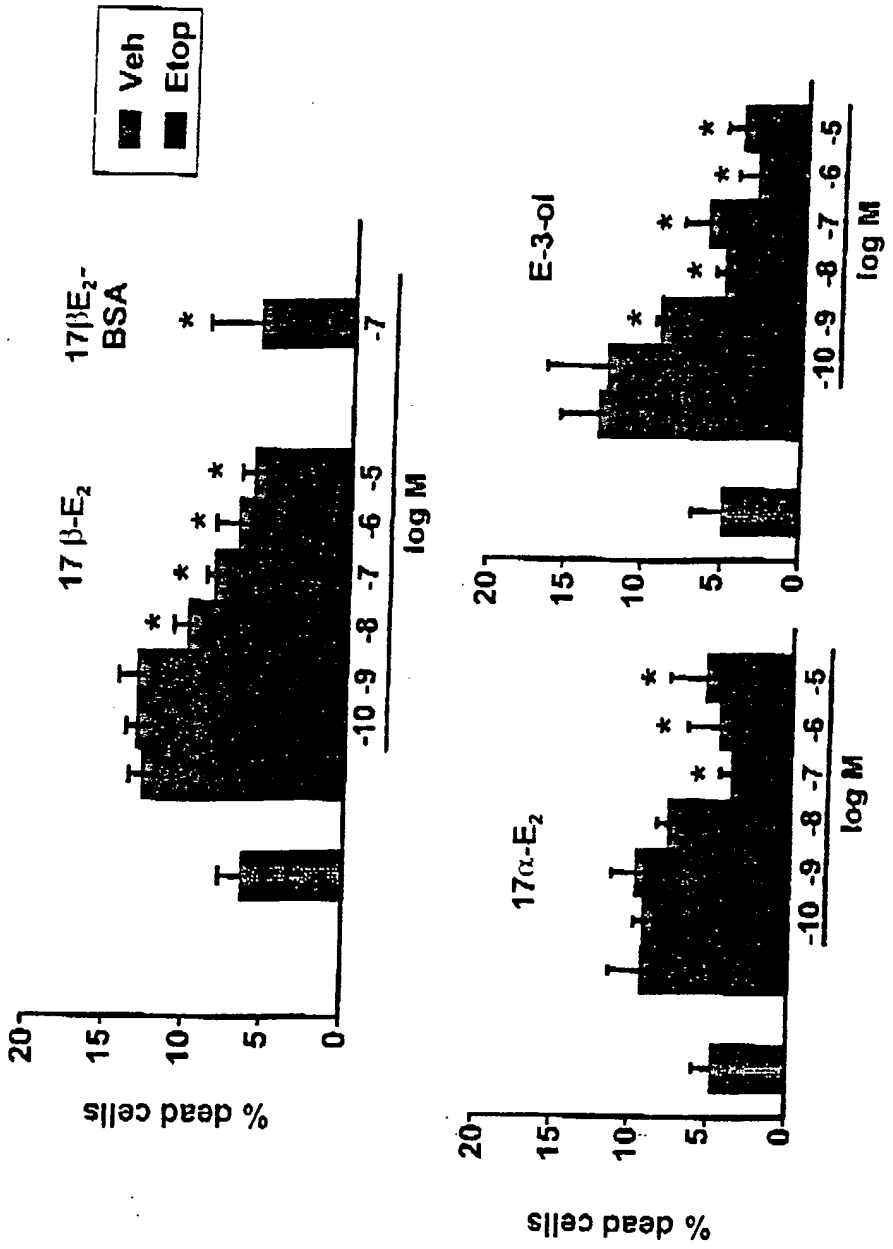


Figure 4: Inhibition of apoptosis of MLO-Y4 osteocytic cells by ANGELS

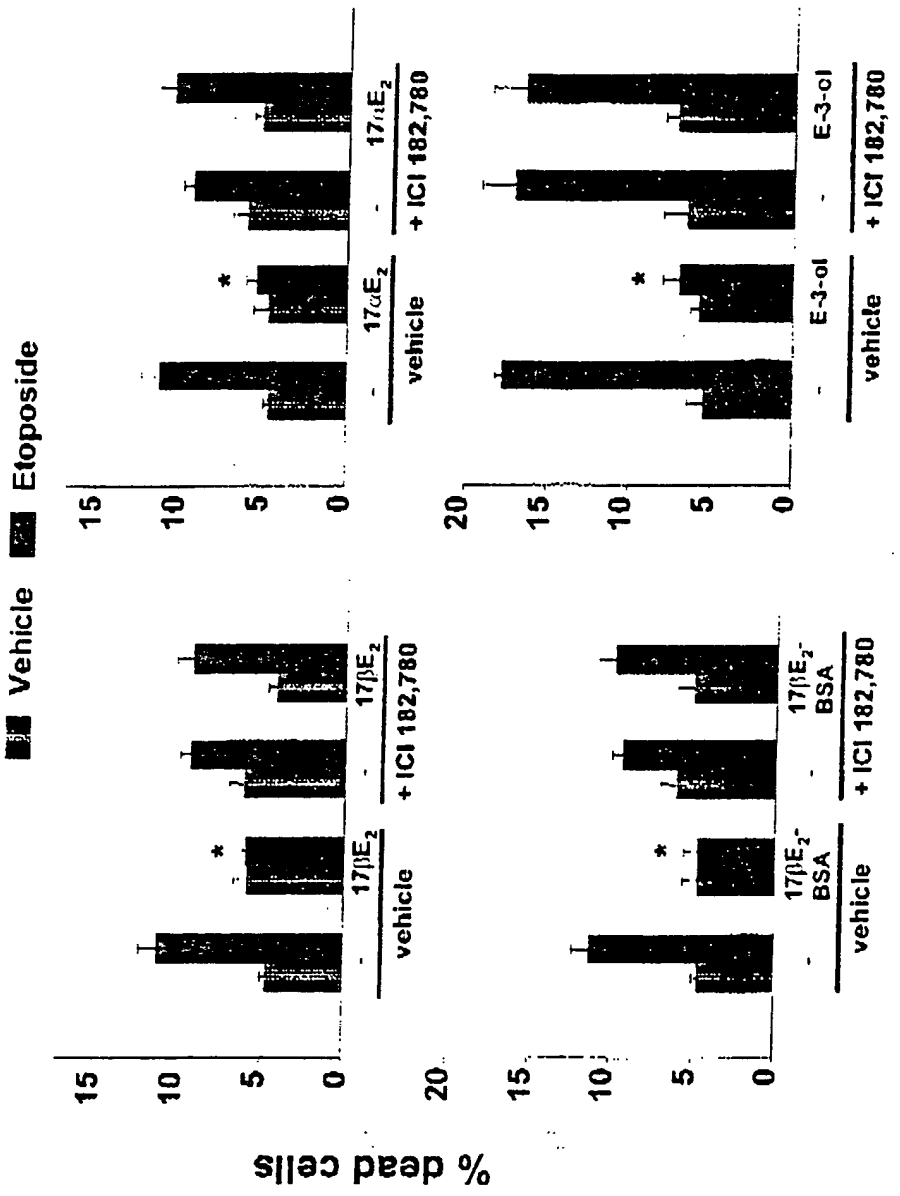


Figure 5: Blockade of the anti-apoptotic effect of estrogen and ANGELS by ICI 182,780 in osteoblastic cells

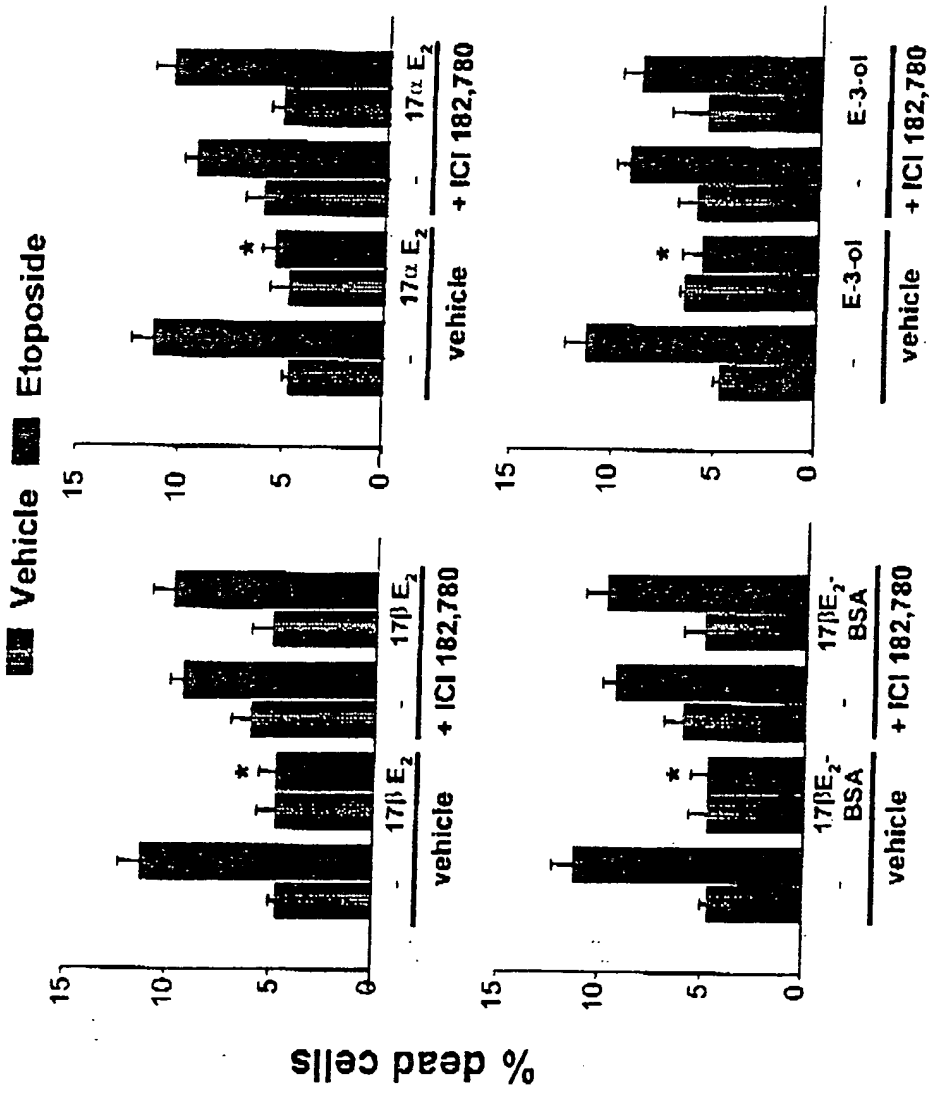


Figure 6: Inhibition of the antiapoptotic effect of estrogen and ANGELS by ICI 182,780 in MLO-Y4 osteocytic cells

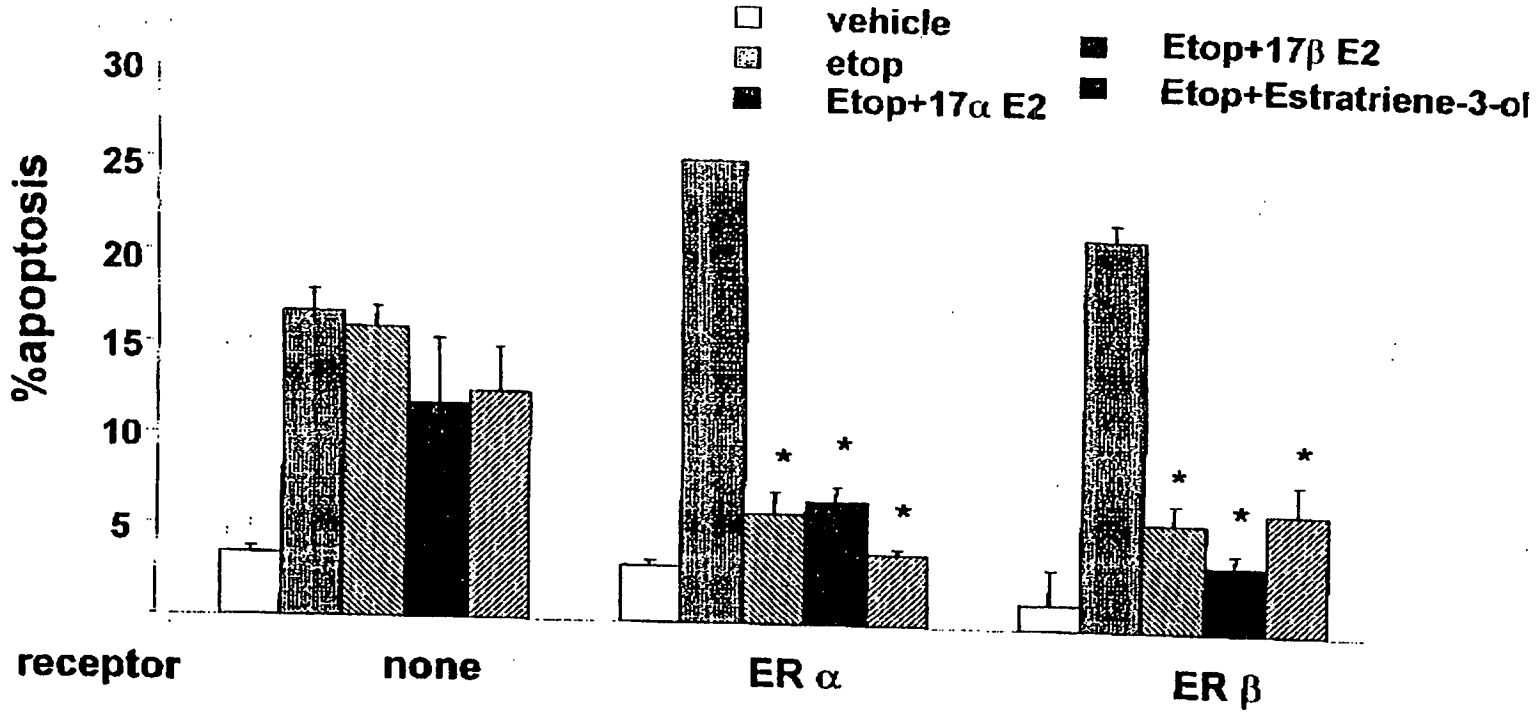


Figure 7: Estrogen receptor a or b is required for the antiapoptotic effects of 17b estradiol, 17a estradiol, and estratriene-3-ol on etoposide-induced apoptosis (experiment 1/21//99).

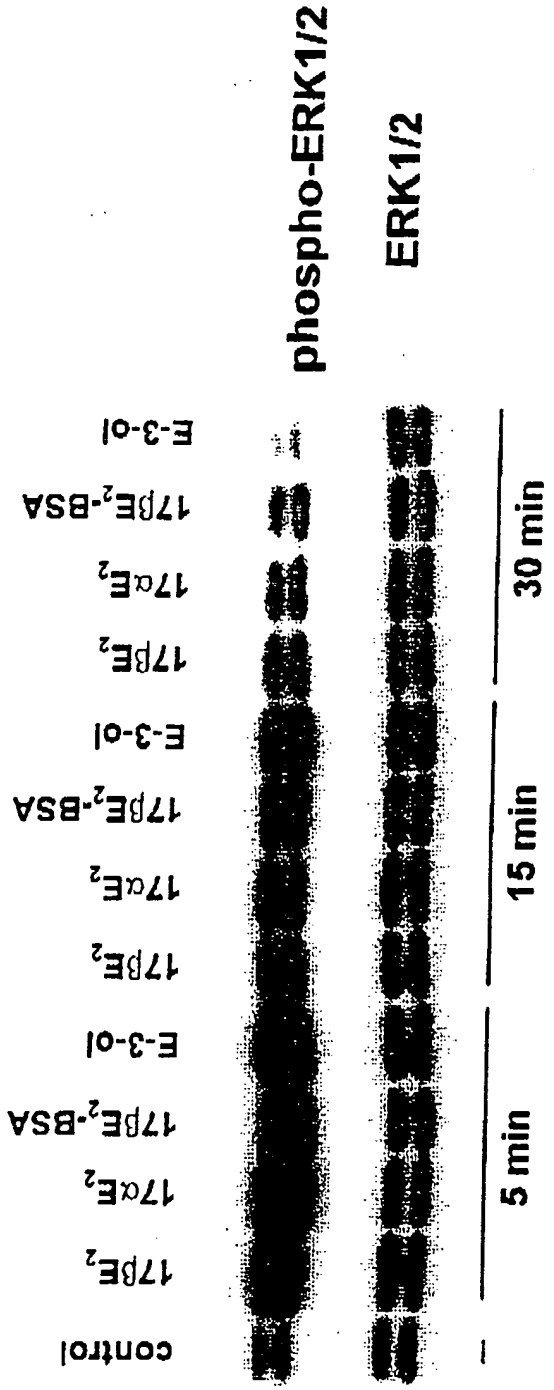


Figure 8: Activation of Extracellular Signal Regulated Kinases (ERKs)

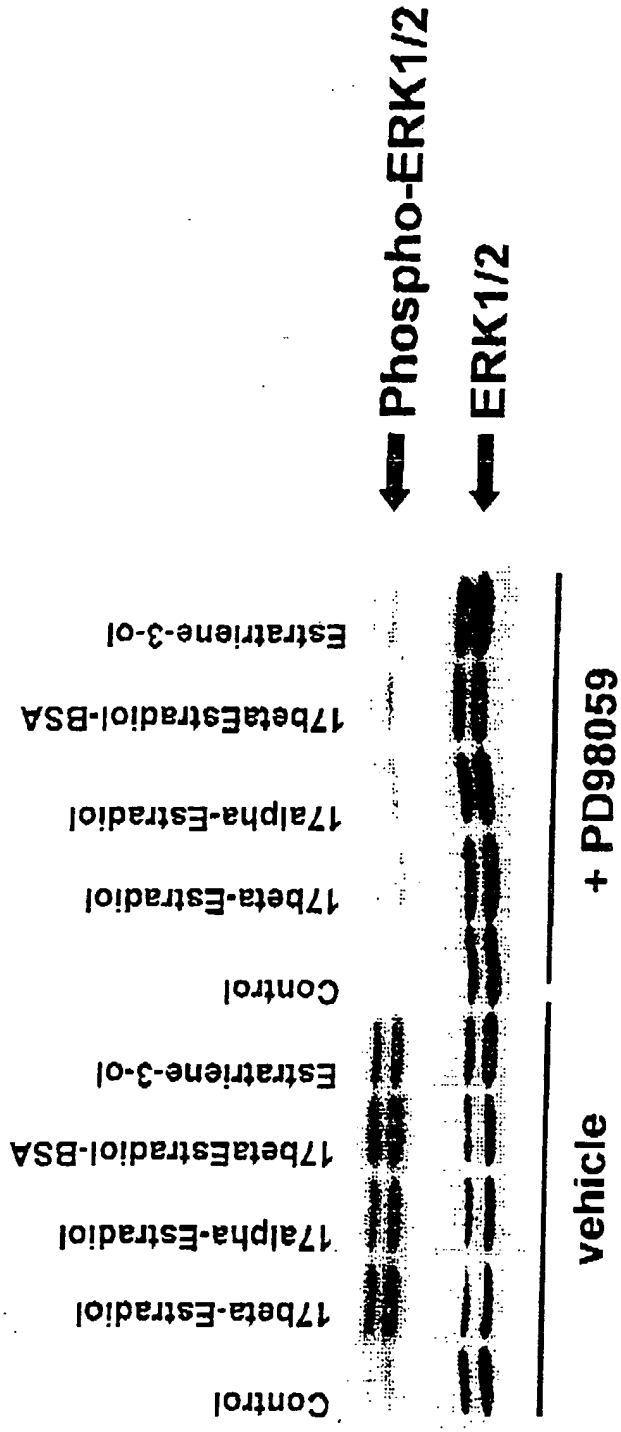


Figure 9: The effect of estrogenic compounds on the activation of ERK1/2 is blocked by a specific inhibitor.

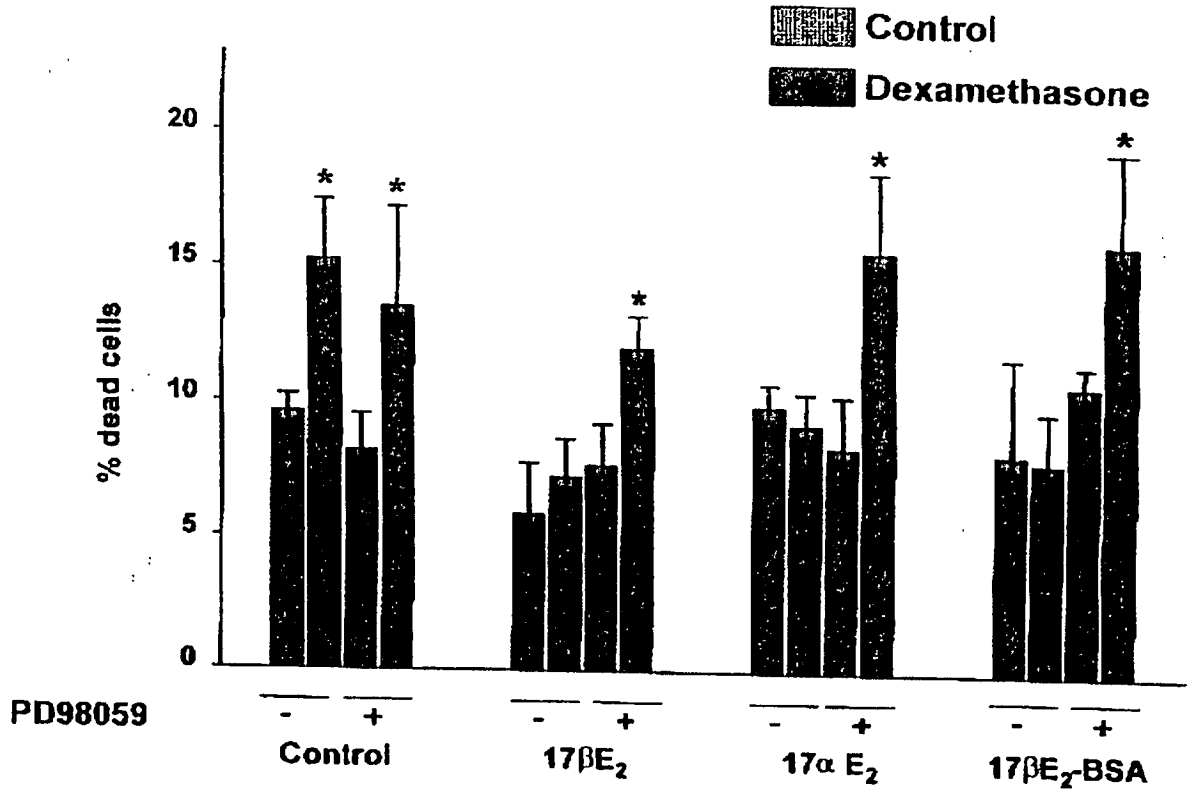


Figure 10: The specific inhibitor of ERK activation abolishes the anti-apoptotic effect of the estrogenic compounds.

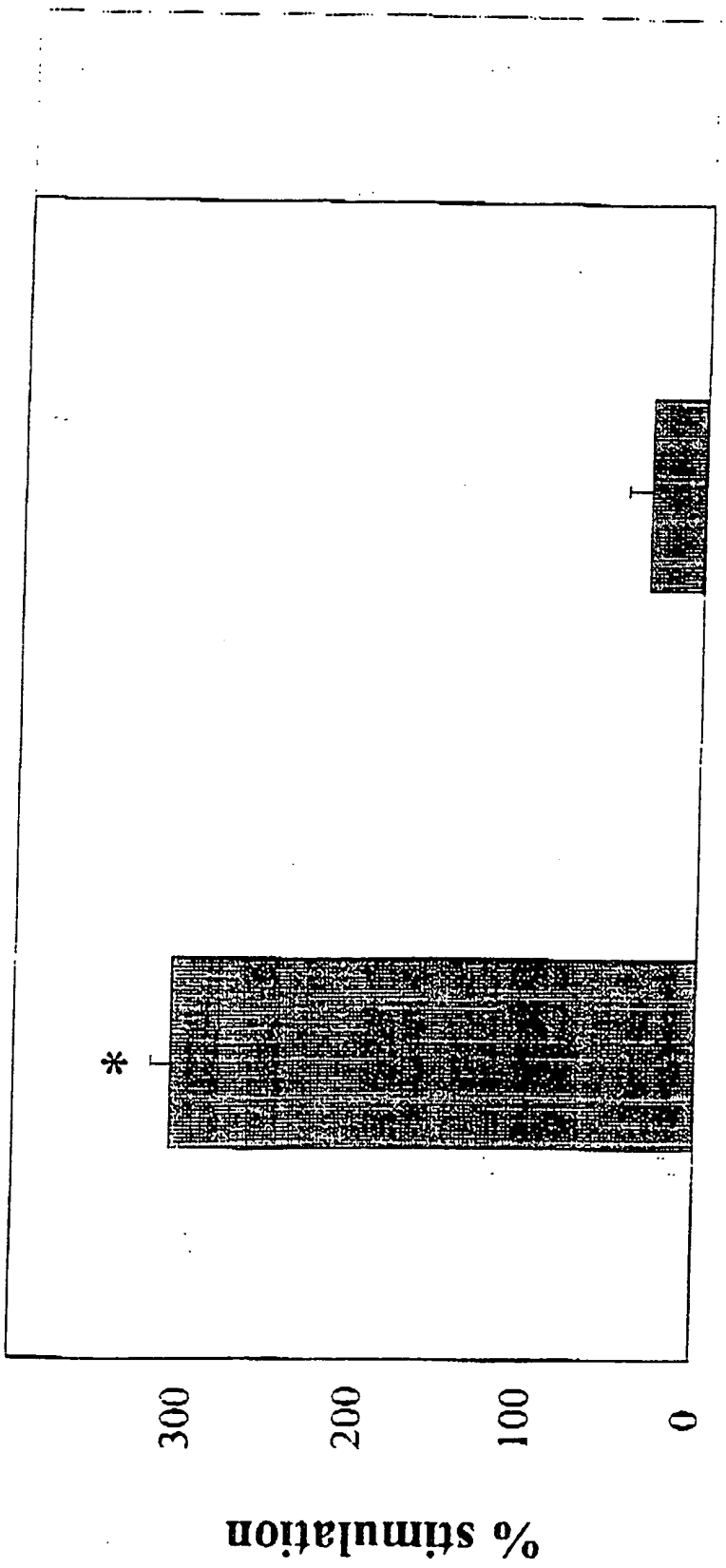
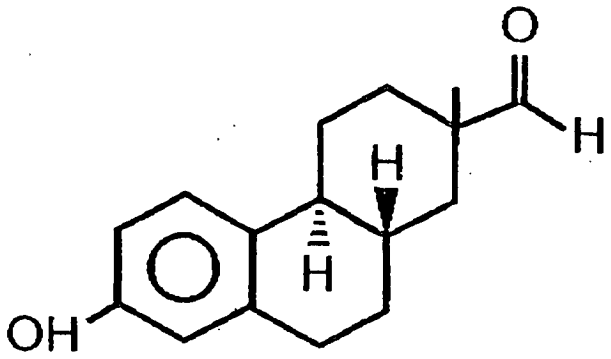
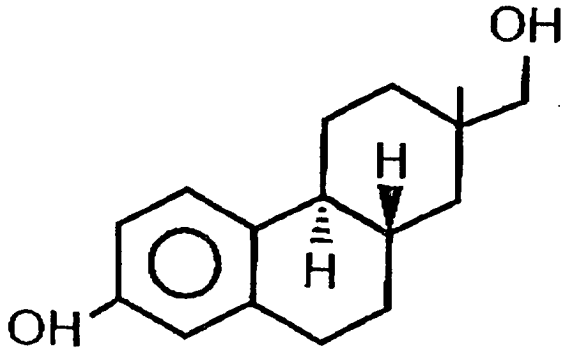


Figure 11: Unlike 17β estradiol, estratriene-3-ol does not transactivate an estrogen response element through ERα.



$C_{16}H_{20}O_2$
MW=244

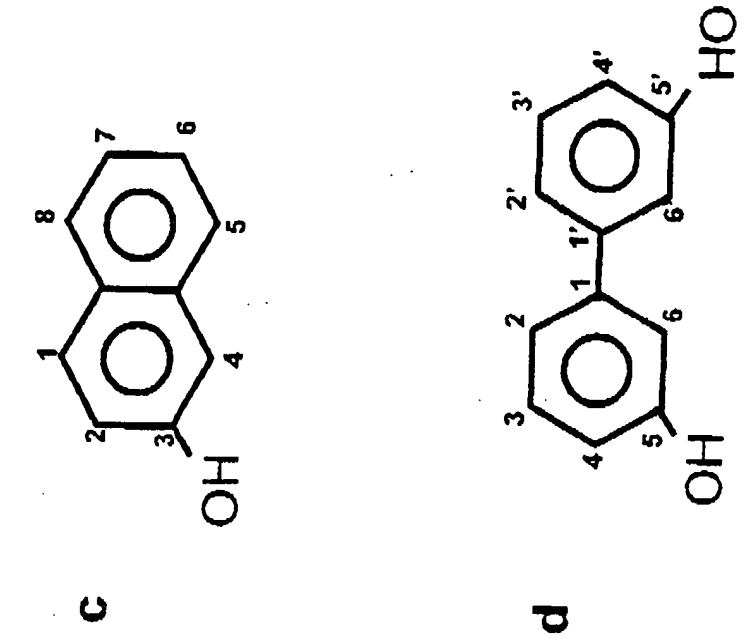
[2S-(2a,4aα,10aβ)]-1,2,3,4,4a,9,10,10a-Octahydro-7-hydroxy-2-methyl-2-phenanthrenecarboxaldehyde



$C_{16}H_{22}O_2$
MW=246

[2S-(2a,4aα,10aβ)]-1,2,3,4,4a,9,10,10a-Octahydro-7-hydroxy-2-methyl-2-phenanthrenemethanol

Figure 12



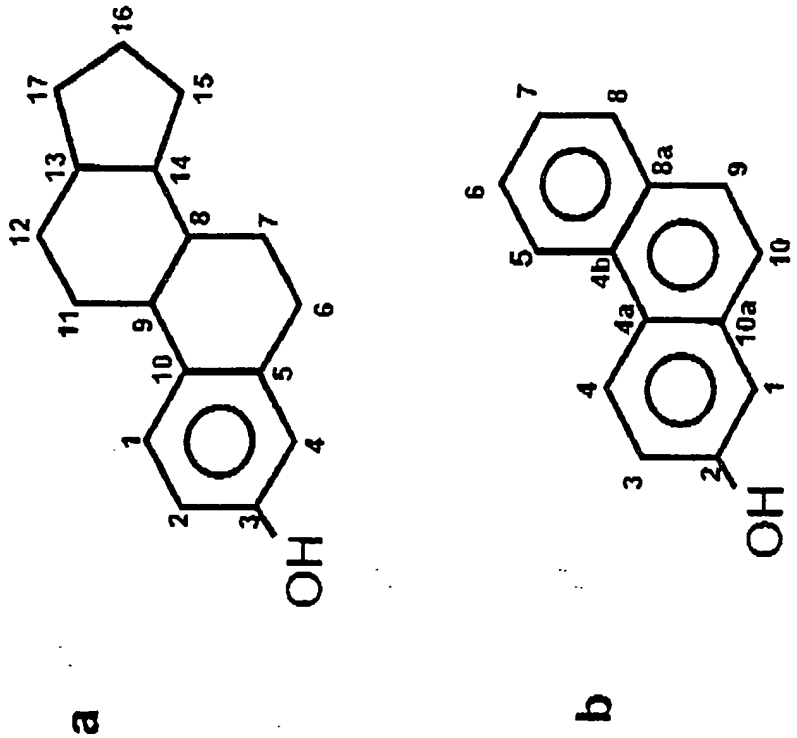


Figure 13

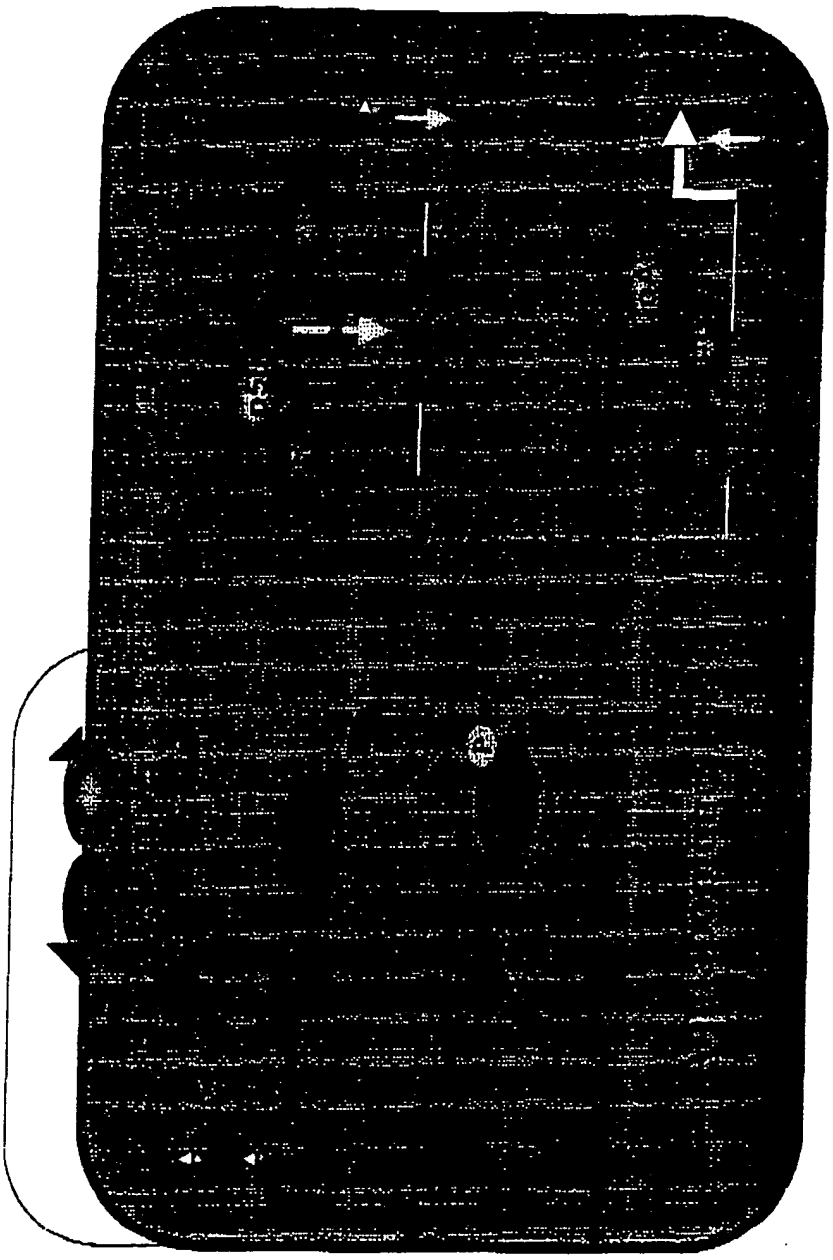


Figure 14: Mechanisms of Estrogen Receptor Action

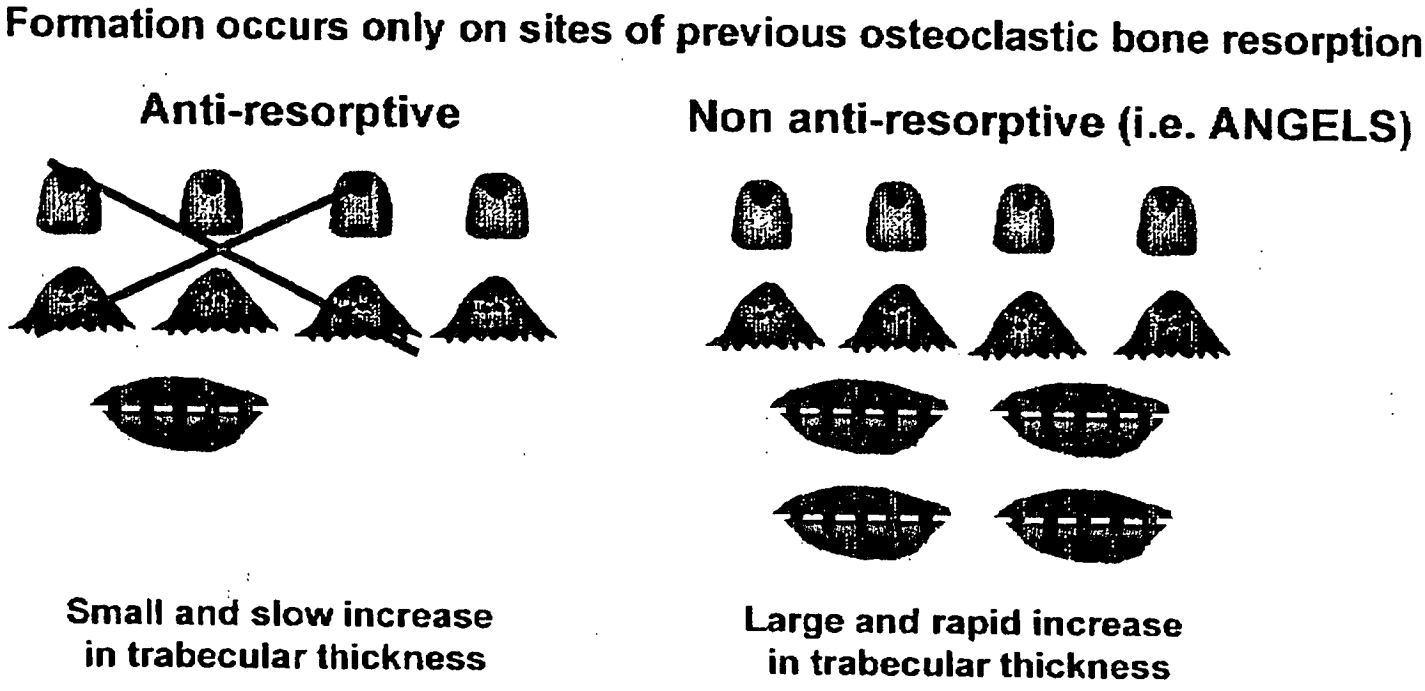
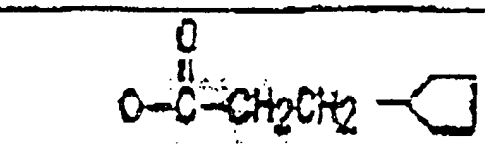


Figure 15: Implications of the effects of anti-resorptive vs. non anti-resorptive agents on apoptosis

R AND/OR R' SUBSTITUTION:	
	STRUCTURE:
HYDR	-OH
[illegible]	$-CH_3$
METHYL ETH	$-OCH_3$
ACET	$O-\overset{O}{\overset{\|}{C}}-CH_3$
ETHYL ETH	$O-CH_2-CH_3$
3, 5 (OR 3, 4) DIMETHYL ETH	OCH_3, OCH_3
ETHYN	$C\equiv CH$, OH
BENZ	$O-\overset{O}{\overset{\|}{C}}$ + benzene ring
BENZYL ETH	OCH_2 + benzene ring
GLUCURO	$C_6H_8O_6$
SULFATE SODIUM	OSO_3Na
CHL	Cl
VALE	$-C_5H_8O$
CYCLOPENTYLPROPI	$-O-\overset{O}{\overset{\|}{C}}-(CH_2)_2$ + cyclopentane ring
PROPI	$-O-\overset{O}{\overset{\|}{C}}-(CH_2)_2$
HEMISUCC	$-C_4H_4O_3$
PALM	$-C_{16}H_{32}O_2$

Figure 16A

R AND/OR R SUBSTITUTIONS	
	STRUCTURE
SODIUM PHOSP	$-O-PO_3Na_2$
ENANTH	$-C_7H_{12}O$
GLUCURONIDE SODIUM S	$-C_6H_8O_6Na$
STEA	$-C_{18}H_{34}O$
TRETHYL AMMONIUM S	$-N-(C_2H_5)_3$
CYPIO	$O-\overset{O}{\overset{\|}{C}}-CH_2CH_2-$ 

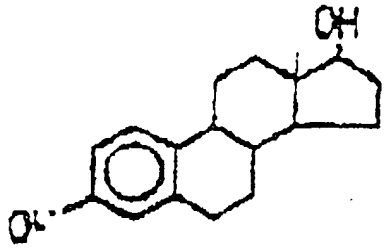
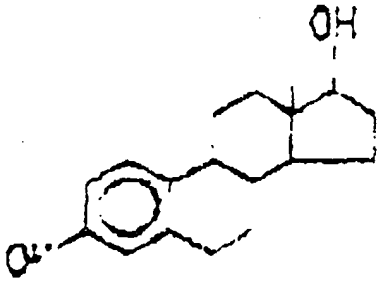
17β EST	
17α EST	

Figure 16B

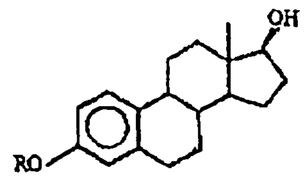
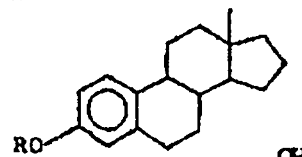
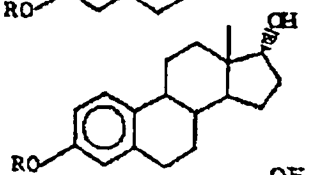
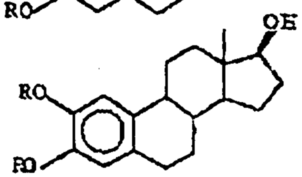
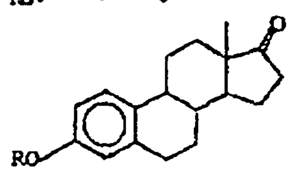
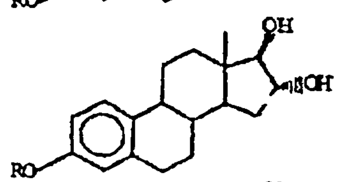
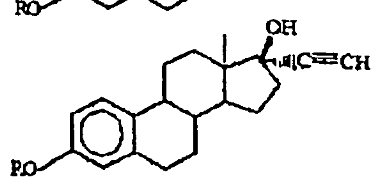
Structure	R	Name
	R=H	3,17β-Estradiol
	R=CH_3	3,17β-Estradiol 3-O-ME
	R=H	Estratriene-3-ol
	R=H	3,17α-Estradiol
	R=CH_3CO	3,17α-Estradiol 3-acetate
	R=H	2-Hydroxy-17β-estradiol
	R=CH_3	17β-Estradiol 2,3-O-ME
	R=H	Estrone
	R=CH_3	Estrone 3-O-ME
	R=H	Estriol
	R=CH_3	Estriol 3-O-ME
	R=H	Ethynyl Estradiol
	R=CH_3	Mestranol

Figure 17

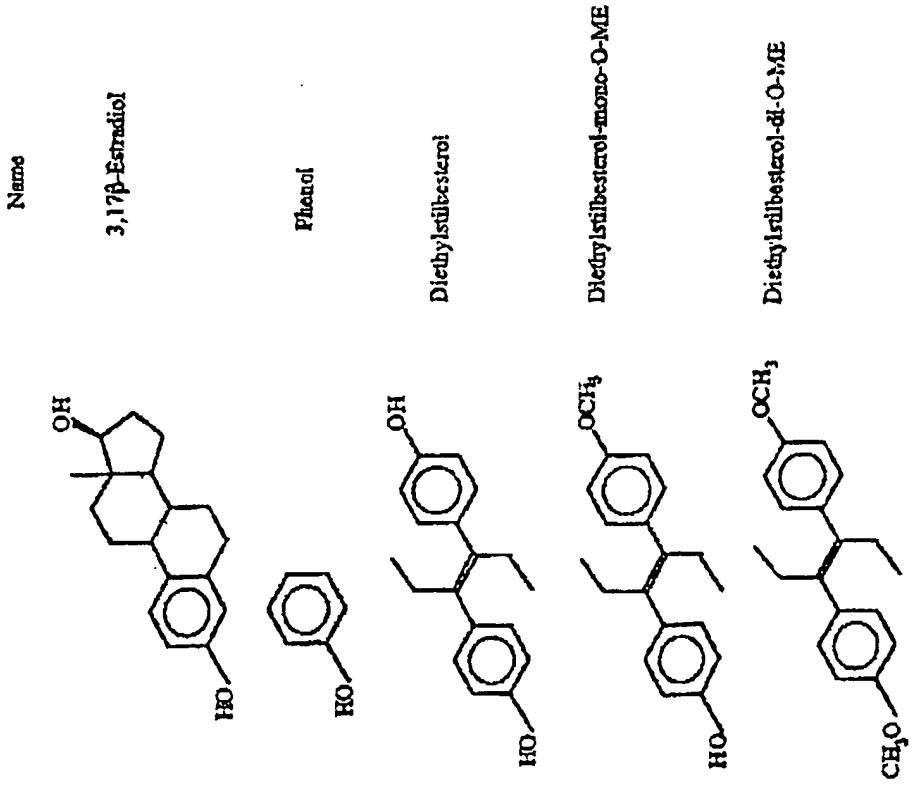

Name
3,17β-Estradiol
Phenol
Diethylstilbesterol
Diethylstilbesterol-mono-O-ME
Diethylstilbesterol-di-O-ME
OH
HO
OCH3
CH3O

Figure 18

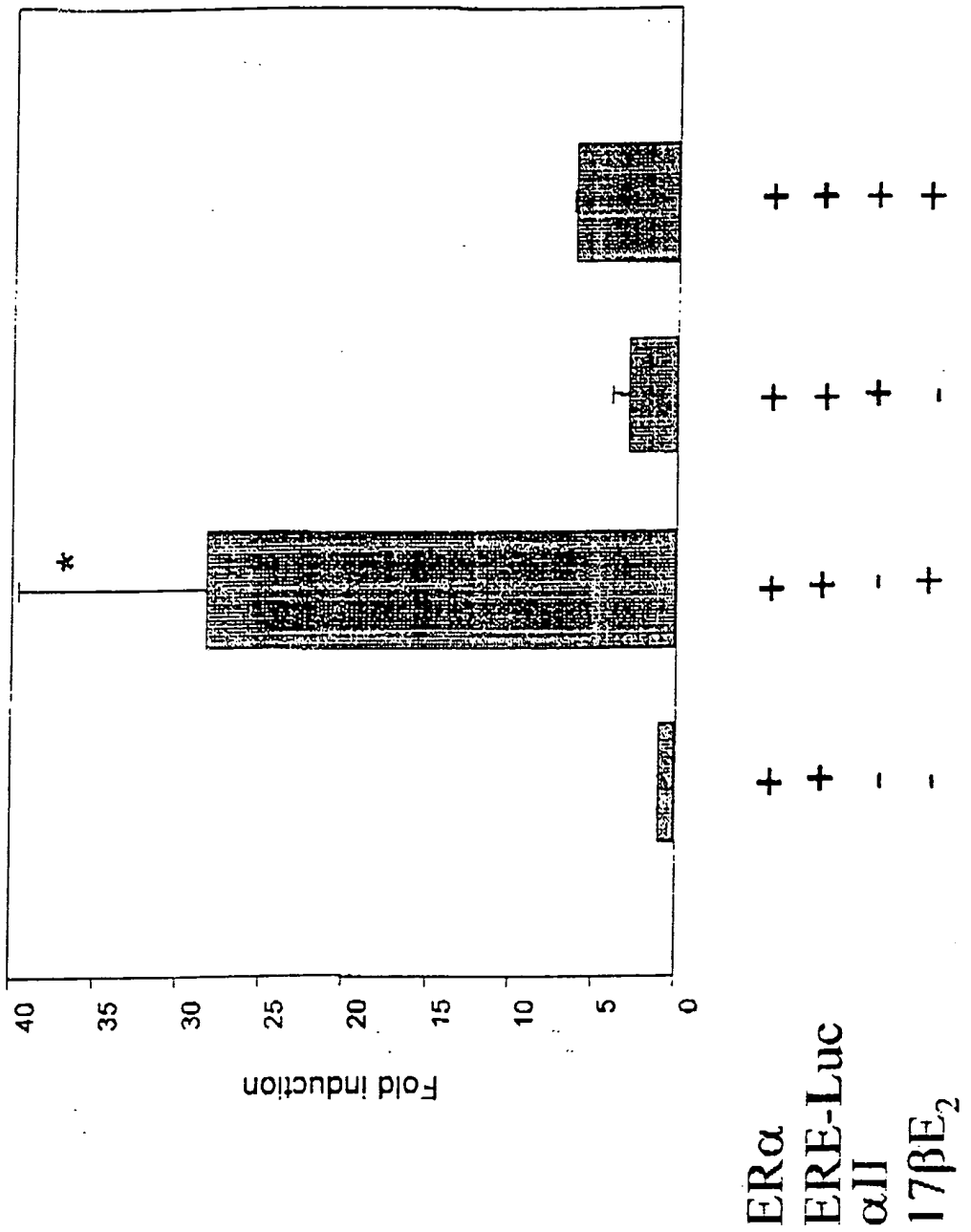


Figure 19: Effect of the all peptide on the 17bE_2-induced ERE activity in 293 cells

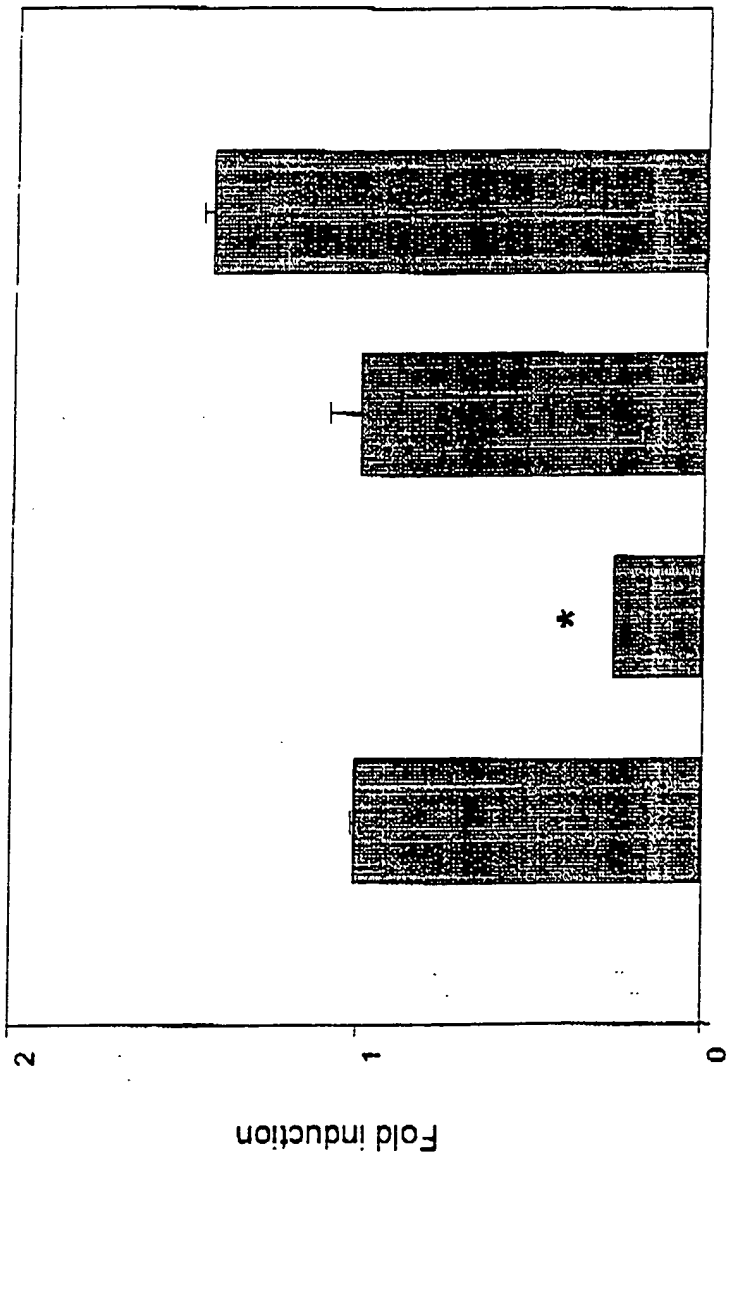


Figure 20: Effect of the all peptide on the 17bE_2-induced inhibition of IL-6 activity in 293 cells

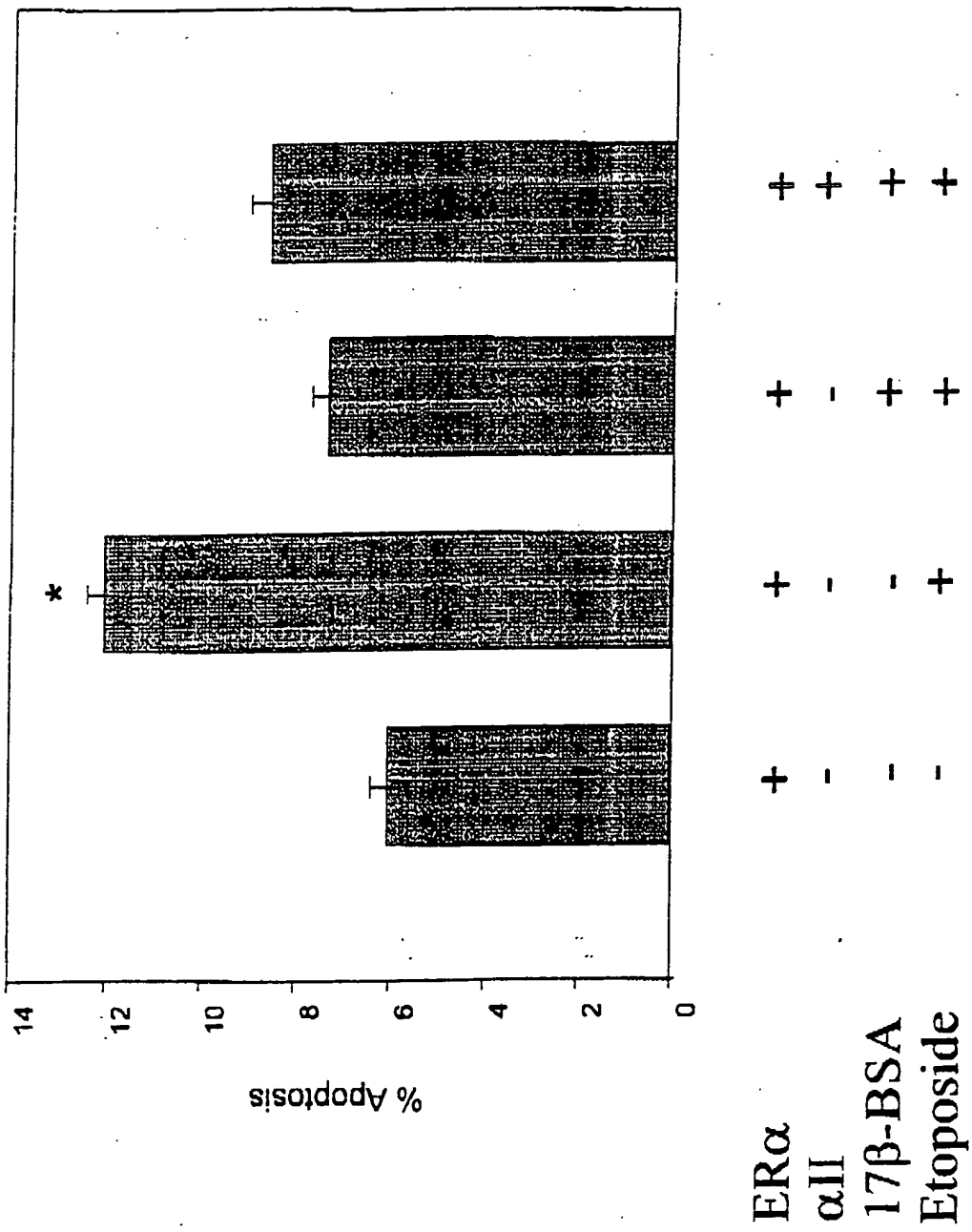


Figure 21: Effect of the all peptide on the Etoposide-induced apoptosis of 17b-BSA-activated 293 cells